

#### ABSTRACT OF THE DISCLOSURE

A method of producing an adsorption medium to remove at least one constituent from a feed stream. The method comprises dissolving at least one metal compound in a solvent to form a metal solution, dissolving polyacrylonitrile into the metal solution to form a PAN-metal solution, and depositing the PAN-metal solution into a quenching bath to produce the adsorption medium. The at least one constituent, such as arsenic, selenium, or antimony, is removed from the feed stream by passing the feed stream through the adsorption medium. An adsorption medium having an increased metal loading and increased capacity for arresting the at least one constituent to be removed is also disclosed. The adsorption medium includes a polyacrylonitrile matrix and at least one metal hydroxide incorporated into the polyacrylonitrile matrix.

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